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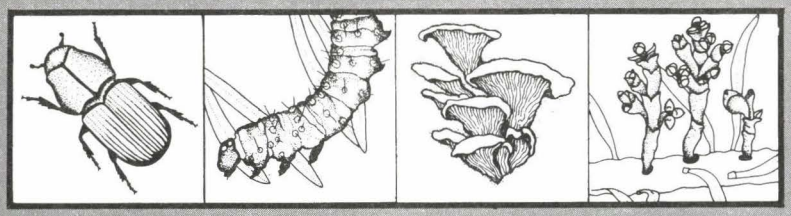

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EVALUATION OF DWARF MISTLETOE CONTROL PROJECTS ON THE SUPERIOR RANGER DISTRICT, LOLO NATIONAL FOREST

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ROCKY MOUNTAIN REGION

by

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ABSTRACT

Many residual Douglas-fir and some western larch are infested by dwarf mistletoe and pose a threat to regeneration. Felling or girdling these residuals, along with sanitation/thinning of dense patches of regeneration will reduce dwarf mistletoe intensity and increase future volume yields. The present net worth of the projects is $458 per acre, and the benefit/cost ratio is 6.11/1. Value added to the economy is also substantial. Control is recommended.

INTRODUCTION

The Superior Ranger District has proposed four areas for dwarf mistletoe control:

1. Fourmile.--Overstory removal and thinning/sanitation of the understory.

2. Cold Creek.--Thinning/sanitation.

3. Stand 64-4-09.--Overstory removal and thinning/sanitation of the understory.

4. Stand 64-1-64, Westfall Creek.--Overstory removal and thinning/sanitation of the understory.

Doug Berglund and Debbie Reynolds, Superior RD, and I evaluated the first two areas on March 30. We visited the last two areas on June 2; Bert Stout and Heidi Trechsel, Superior RD, and Ken Gibson, CFPM, were with us.

United States Department of Agriculture | Forest Service | Northern Region | State & Private Forestry | P.O. Box 7669 Missoula, Montana 59807

TECHNICAL INFORMATION

Causal agents.--Douglas-fir dwarf mistletoe, Arceuthobium douglasii; and western larch dwarf mistletoe, A. laricis.

Hosts.--Douglas-fir, Pseudotsuga menziesii; and western larch, Larix occidentalis.

Type of damage.--Reduction of tree vigor, height, and diameter growth, and some mortality. My estimate for average volume loss in infested Douglas-fir and western larch type is about 20 cubic feet per acre per year. 1/ This does not include losses to other pathogens and insects in trees made vulnerable by dwarf mistletoe.

STAND DESCRIPTIONS

Fourmile.--This area supports a stand of ponderosa pine and western larch regeneration containing a few pockets of Douglas-fir. Residual Douglas-fir overstory surrounding the unit and some of the pockets within the unit are dwarf mistletoe infested. The scattered western larch overstory is also dwarf mistletoe infested.

Cold Creek.--This area supports a sapling stand of Douglas-fir previously thinned to a tight spacing, and needs additional thinning. Some trees have mistletoe-caused brooms; some do not. An area above the road has a dwarf mistletoe-infested overstory that should be logged before any control activities are undertaken there.

Stand 64-4-09.--This is an area of Douglas-fir that was thinned once, but ingrowth has resulted in a present stand with more than 3,000 stems per acre. There are some residual western larch and Douglas-fir (more than 20 feet tall) with dwarf mistletoe; most of the younger trees are not infected.

Stand 64-1-64, Westfall Creek.--This area was logged in 1962. Some large dwarf mistletoe-infested Douglas-fir residuals and some smaller infested trees are left. Regeneration is mostly Douglas-fir.

MANAGEMENT ALTERNATIVES

1. Defer treatment.--Potential yields would be about 50 percent lower than in alternative 2. Dwarf mistletoe infestation would become worse. This alternative has the advantage of requiring the least investment.

1/ Dooling, O. J. and R. G. Eder. 1981. An assessment of dwarf mistletoes in Montana. USDA Forest Service, Northern Region, Forest Pest Management Report 81-12.

2. Fell or girdle infested residual Douglas-fir and western larch and thin/sanitize regeneration.--This would maximize yields and largely eliminate dwarf misteltoe from the Douglas-fir and western larch.

3. Convert to ponderosa pine, a nonsusceptible species.--This is biologically sound, but potential yields would probably be lower than in alternative 2. A pure ponderosa pine stand is not as silviculturally desirable as a mixed species stand.

PREFERRED ALTERNATIVE

Preferred treatment for all four units is alternative 2.

ECONOMIC ANALYSIS

Economic analysis of the control projects is based on the following data:

Control costs	$75/acre
Years to product	
Thinning	60
Harvest	100
Yield prediction	
No treatment	15 MBF/acre
Treatment	
Thin, age 80	2 MBF/acre
Harvest	18 MBF/acre
Current stumpage	$210/MBF
Discount rate	4 percent

Year	Volume without treatment (MBF/acre)	Volume with treatment (MBF/acre)	Benefit of treatment (MBF/acre)	Benefit value at harvest 1/ ($/acre)	Present value of benefit 2/ ($/acre)	Project cost ($/acre)
0 Age 20	0	0	0	0	0	75
60 Age 80	0	2	2	1,378	262	-
100 Age 120	15	18	3	4,564	271	-
	15	20	5	$5,942	$533	$75

1/ Current stumpage of $210/MBF increased at 2 percent compound interest.

2/ Harvest value discounted to present at 4 percent.

Present net worth is the difference between present value of benefits and project cost: $458/acre. The benefit/cost ratio is 6.11/1. Increasing stumpage values over time makes the project economically viable.

DISCUSSION

Recovery of volume losses through dwarf mistletoe control could generate additional employment in the forest products industry and result in what economists call "value added." While value added cannot be used in an economic analysis, it is substantial enough to be considered when determining overall benefits. Each million board feet of timber cut creates 10.56 person years of employment, 2/ paying an average of $16,784 per person per year. 3/ For the proposed control units, this translates into the generation of 0.02 and 0.03 years of employment per acre in 60 and 100 years, respectively. The increased employment would add $839 to the economy for each acre in the treatment areas.

RECOMMENDATIONS

Reduction of dwarf mistletoe impact through silvicultural practices is both biologically and economically sound. I recommend the use of insect and disease funds for the projects. Area recommendations are:

1. Fourmile.--Remove all the Douglas-fir overstory and infested pockets of Douglas-fir regeneration. Thin and sanitize the remainder of the regeneration. If any larch is desired in the next rotation, remove the infested larch overstory.

2. Cold Creek.--Thin and sanitize the Douglas-fir.

3. Stand 64-4-09.--Enlarge this unit by including the stand above the road, remove the older Douglas-fir (more than 20 feet tall) even though it is not obviously infected, and thin/sanitize the younger regeneration.

4. Stand 64-1-64, Westfall Creek.--Girdle and let stand the larger infected Douglas-fir residuals, fell the 3- to 4-inch d.b.h. trees (these were present in 1962 and are probably infested), and thin/ sanitize the recent regeneration.

Because control will be by felling or girdling scattered cull trees from areas already essentially clearcut, and/or thinning of overstocked stands, there will be no additional adverse impact on other resources. The projects are neither major nor controversial, and do not need environmental analyses.

2/ Personal communication; Howard McDowell, Inland Forest Resource Council, Missoula, Montana (September 1981).

3/ Personal communiation; Paul Polzin, Bureau of Business and Economics Research, University of Montana, Missoula, Montana (September 1981).